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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/764,479	01/27/2004	Kimitaka Kamijo	118005	9134
25944 7590 03/23/2006				
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ALEXANDRIA, VA 22320				
			EXAMINER	
			DUONG, THOI V	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 03/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/764,479

Applicant(s)

KAMIJO, KIMITAKA

Examiner

Thoi V. Duong

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-11 and 13-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-11 and 13-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 121905.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### **DETAILED ACTION**

1. This office action is in response to the Amendment filed January 03, 2006.
- Accordingly, claims 1, 2, 4, 5, 8, 14 and 15 were amended, and claims 3 and 12 were cancelled. Currently, claims 1, 2, 4-11 and 13-16 are pending in this application.

### ***Response to Arguments***

2. Applicant's arguments with respect to claims 1, 2, 14 and 15 have been considered but are moot in view of the new ground(s) of rejection.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 9-11, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka et al. (Yamanaka, USPN 6,873,384 B2) in view of Nishiyama et al. (USPN 6,888,678 B2).

Re claims 1 and 14, as shown in Figs. 2, 4 and 18, Yamanaka discloses a liquid crystal display device 102, comprising:

- a lower substrate 1;
- an upper substrate 11 opposing the lower substrate 1;
- a liquid crystal layer 14 disposed between the lower substrate 1 and the upper substrate 11;
- a pixel region including pixels juxtaposed at a pixel pitch (Fig. 18); and

a reflective layer 3' on an inner surface of the lower substrate 1, the reflective layer including an irregular surface including a plurality of irregularities 4 (Fig. 2), the irregular surface including at least two types of irregularity groups, each of the irregularity groups having substantially randomly arranged irregularities in plan view, and the irregularity groups being substantially arranged in plan view as shown in Fig. 18.

However, Yamanaka does not disclose the irregularity groups having different shapes or sizes, wherein at least a portion of the different irregularity groups has a different length from the pixel pitch and is disposed within a single pixel in plan view.

As shown in Fig. 10, Nishiyama discloses a reflective layer 101 including an irregular surface including a plurality of irregularities 107-112 in pixels 104-106, the irregular surface including at least two types of irregularity groups, and the irregularity groups having different shapes or sizes, wherein at least a portion (107-112) of the different irregularity groups has a different length from the pixel pitch and is disposed within a single pixel (104-106) in plan view (see also Fig. 9) (col. 4, lines 47-55; col. 12, lines 36-41; col. 17, lines 10-30; and col. 18, lines 32-41).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display device of Yamanaka with the teaching of Nishiyama by forming the irregularity groups having different shapes or sizes, wherein at least a portion of the different irregularity groups has a different length from the pixel pitch and is disposed within a single pixel in plan view in

order to obtain reflection characteristics with no clouring, i.e., good characteristics of high uniformity (col. 17, lines 28-30).

Re claim 9, Yamanaka discloses that the planar shapes of the irregularity groups 201 being substantially rectangular as shown in Figs. 17 and 18,

wherein, re claim 10, at least one irregularity 4 are formed at each of the boundaries between the adjacent irregularity groups 201 as shown in Fig. 18 (col. 13, lines 27-35).

Re claim 11, Yamanaka discloses that the planar shapes of the irregularity groups are substantially quadrangular and the shapes of two opposing edges of the irregularity groups 201 are substantially the same as shown in Fig. 18 (col. 14, lines 18-23).

Finally, re claim 16, the liquid crystal display device of Yamanaka can be employed in an electronic device such as a personal computer, a liquid crystal television, a liquid crystal monitor of the like (col. 23, lines 60-64).

5. Claims 2, 4-8, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamanaka et al. (Yamanaka, USPN 6,873,384 B2) in view of Tanaka et al. (USPN 6,600,534 B1).

Re claim 2, as shown in Figs. 3 and 4, Yamanaka discloses a liquid crystal display device102, comprising:

a lower substrate 1;

an upper substrate 11 opposing the lower substrate 1;

a liquid crystal layer 14 disposed between the lower substrate 1 and the upper substrate 11; and

a reflective layer 3' on an inner surface of the lower substrate;

an irregular surface including a plurality of irregularities 4 (concave portion) being formed on the surface of the reflective layer 3', the irregular surface including irregularity groups 201 (pixel) each of which has substantially randomly arranged irregularities in plan view, and the irregular surface including a periodically repeating arrangement of irregularities with a plurality of the irregularity groups as a repetition unit (Fig. 3).

Re claim 15, as shown in Figs. 1-4, Yamanaka discloses a reflector 101', comprising:

a substrate 1, and

a reflective layer 3' formed on the substrate 1;

an irregular surface including a plurality of irregularities 4 (concave portion) being formed on the surface of the reflective layer 3', the irregular surface including irregularity groups 201 each having substantially randomly arranged irregularities 4 in plan view, and the irregular surface including periodically repeating arrangement of the irregularities with a plurality of the irregularity groups 201 as a repetition unit (Fig. 3 and col. 13, lines 8-19).

However, Yamanaka does not disclose adjacent rows of periodically repeating units being shifted out of alignment.

As shown in Figs. 9 and 10, Tanaka discloses a reflective liquid crystal display device comprising a plurality of reflective pixel electrodes 235 in a delta arrangement

(col. 16, lines 8-39). Accordingly, adjacent rows of the pixels are shifted out of alignment due to the delta arrangement.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the liquid crystal display device of Yamanaka with the teaching of Tanaka by arranging the pixels in a delta arrangement such that adjacent rows of the pixels are shifted out of alignment in order to suppress a generation of vertical stripes and prevent display roughness (col. 16, lines 33-37).

Re claim 4, Yamanaka discloses that the planar shift length between adjacent rows of the irregularity groups 201 are substantially constant (length between the predetermined points C).

Re claim 5, Yamanaka discloses that the planar shift length between adjacent rows of the irregularity groups 201 or between the predetermined point C approximately equals to a length of one pixel (one irregularity group), the planar shift length are 1/3 or 33% of the length of a row consisting of three irregularity groups 201.

Re claim 8, Yamanaka discloses that the direction of the rows are substantially parallel to an arrangement direction of pixels 201 of the liquid crystal display device 102.

Re claim 6, as shown in Fig. 18 of Yamanaka, the irregularity groups 201 are aligned in one direction (from top to bottom in Fig. 18) in the irregular surface to form rows and each row including at least two types of irregularity groups having different lengths along the extending direction due to different arrangements of concave portions 4 (col. 13, line 63 through col. 14, line 16),

wherein, re claim 7, the irregularity groups 201 have different lengths being randomly arranged in the rows (Fig. 18).

Re claim 13, as shown in Fig. 1 of Yamanaka, since the concave portion 4 of the irregularity group may be located over the boundary of the pixel area 202, the length of the repetition unit of a plurality of the irregularity groups in the direction of the pixels are different from a pitch of the pixels 201 of the liquid crystal display device 102 in Fig. 3 (col. 13, lines 27-35).

### ***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thoi V. Duong whose telephone number is (571) 272-



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2292. The examiner can normally be reached on Monday-Friday from 8:30 am to 4:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim, can be reached at (571) 272-2293.

Thoi Duong



03/18/2006



DUNG T. NGUYEN  
PRIMARY EXAMINER